

Figure 1. A Feynman Diagram representation of proton-neutron scattering.

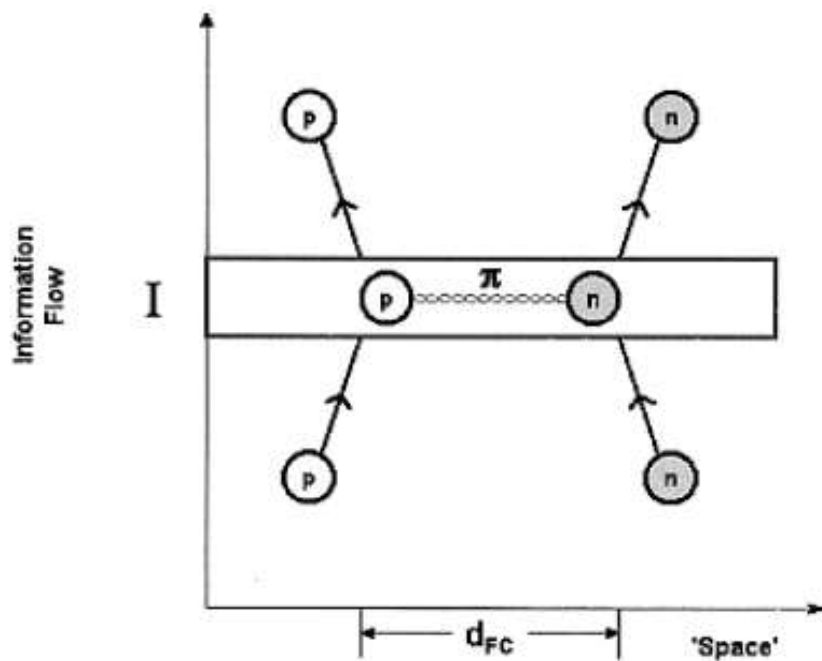


Figure 2. This illustrates a proton and neutron scattering interaction creating a transient pi-meson Feynman Clock of FC (box) with a composite infostate, 'I', in 'info-space'.

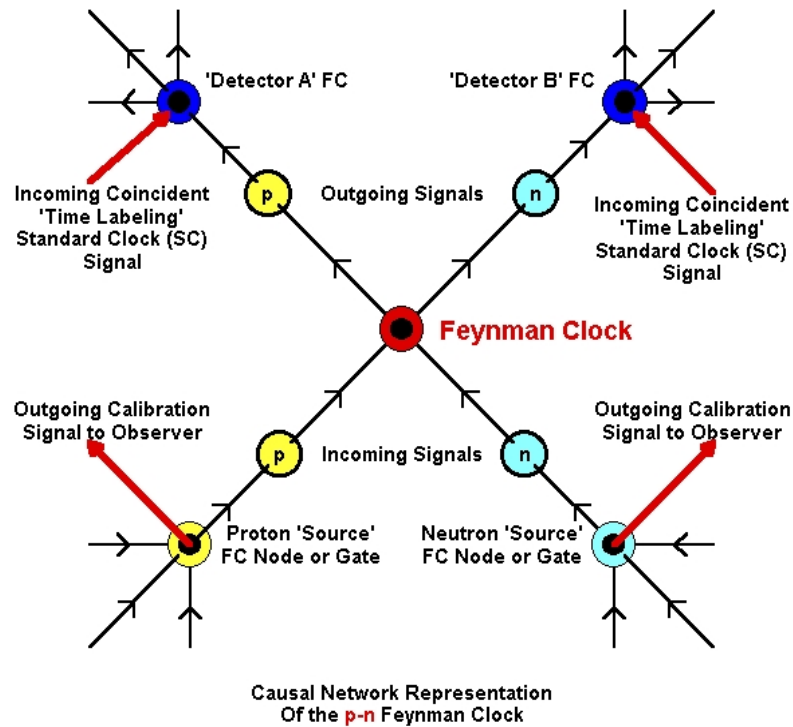


Figure 3. This figure is a causal network node 'map' of the interaction of 'incoming' proton and neutron 'signals'. They 'collide' to create a transient Feynman Clock (the 'force' mediating p-meson is 'inside' the FC). The FC 'computed' (via conservation of momentum 'logic' of the transient FC) outgoing signals follow new trajectories in space (vacuum). The trajectories represent information flow in space. The calibration signals locate and identify the particle signals and therefore the 'implied' FC reaction site in space. These signals are used by the T-computer to time label the calibration signal event representing the spatial location of particles in the transient causal network. The 'directions' of the calibration signals in this figure are meant only to illustrate the ideas and have no special orientation in space with respect to the particles under observation. Note that the incoming calibration signals at the lower part of the figure are not shown for simplicity. The time calibration signals at the detectors may be part of a pulse train of signals from a cyclical standard clock. This standard clock may also be coupled to the position detectors that process the outgoing calibration signals of the incoming proton and neutron.

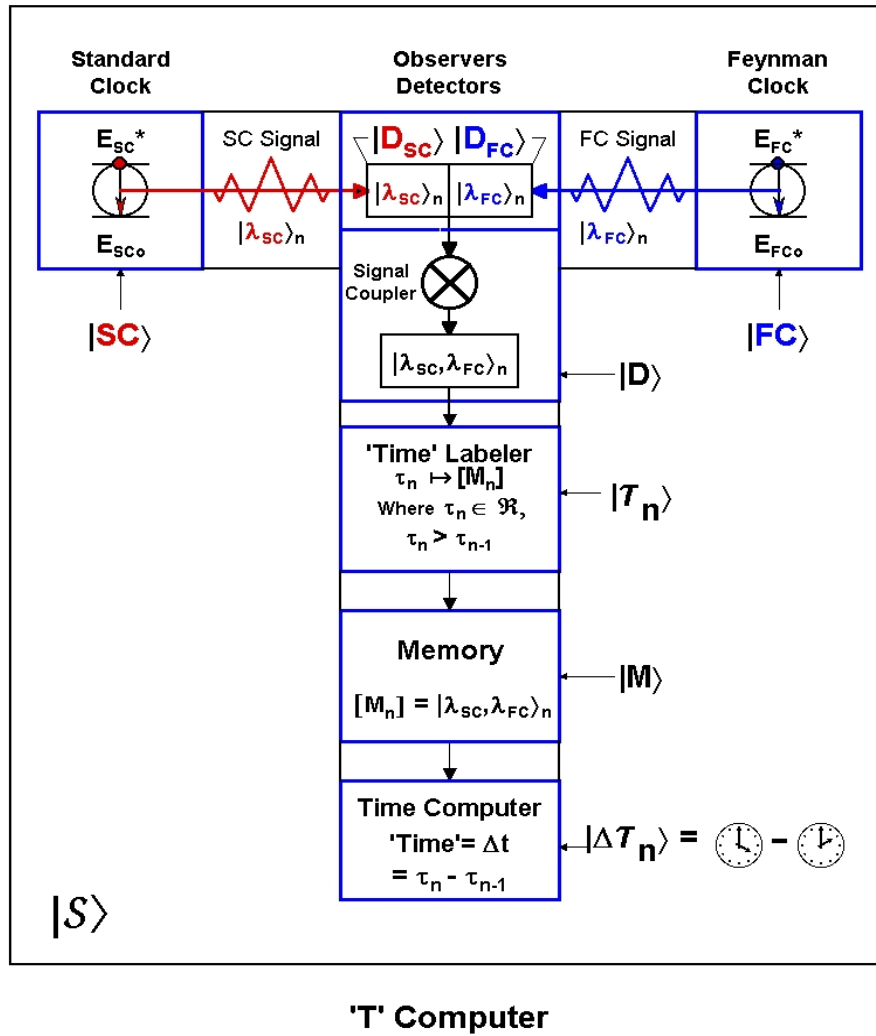


Figure 4. Schematic diagram of a simple idealized T-computer. The functions of the logic 'gates' or nodes and the signals flowing between them represent a general model of the computation of 'time differences' between events in a 'time independent' information space of 'infostates', $I(S)$, and the system or causal network forming the time labeling computer. This state is the collective 'infostate' of the entire network forming the T-computer including the active and inactive components of the relevant computational network. The intent of modeling a T-computer is to show two things. The first point is that 'time' is a computational artifact of a signal mapping process that defines 'time' as function of the coincidence a clock signal with an event signal. The second point is that the T-computer is a component or sub-network of more complex information processing systems. The T-computer is essentially a quantum computer with classical 'time' as an output. The principles in the signal mapping process also apply for larger scale systems that can be treated by classical methods. The key is that all the information used to define time at the macroscopic scale is traceable backwards to the origin of information in the microscopic 'quantum' world.

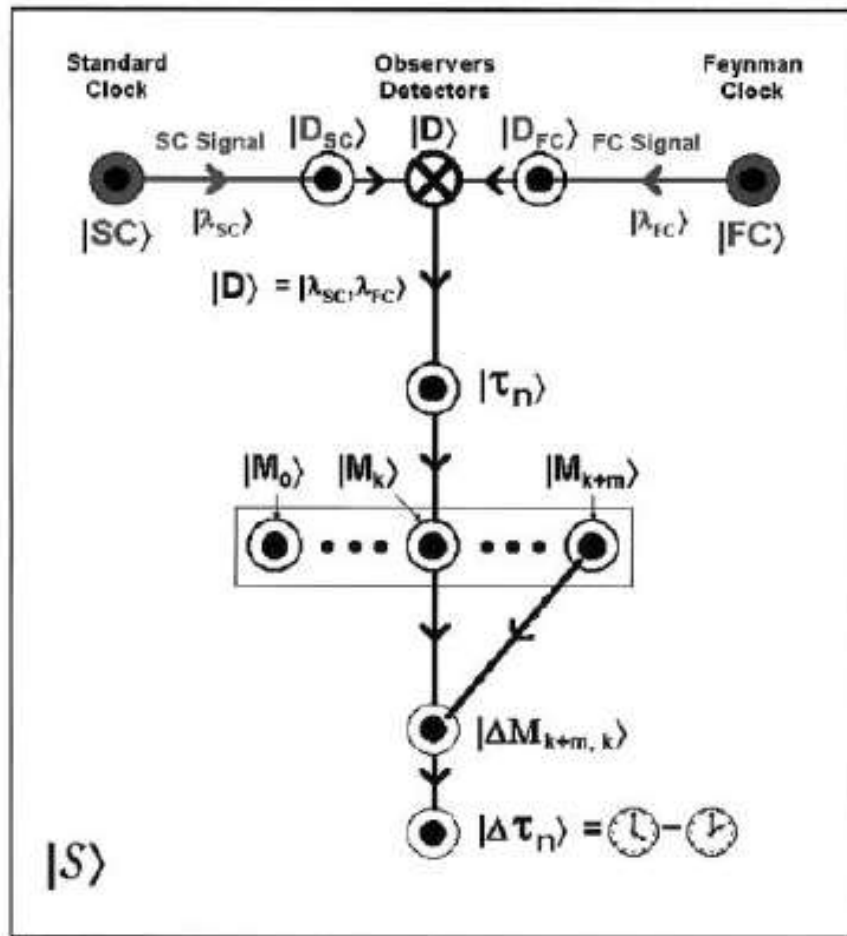


Figure 5. This is a network node representation of the T-computer where the flow of information between nodes and the infostates of the node are indicated. The nodes are the logic gates of causal networks through which information is transferred, modified and created as a result of the interactions of signals with detectors and the signal processing logic of physical systems such as atoms.

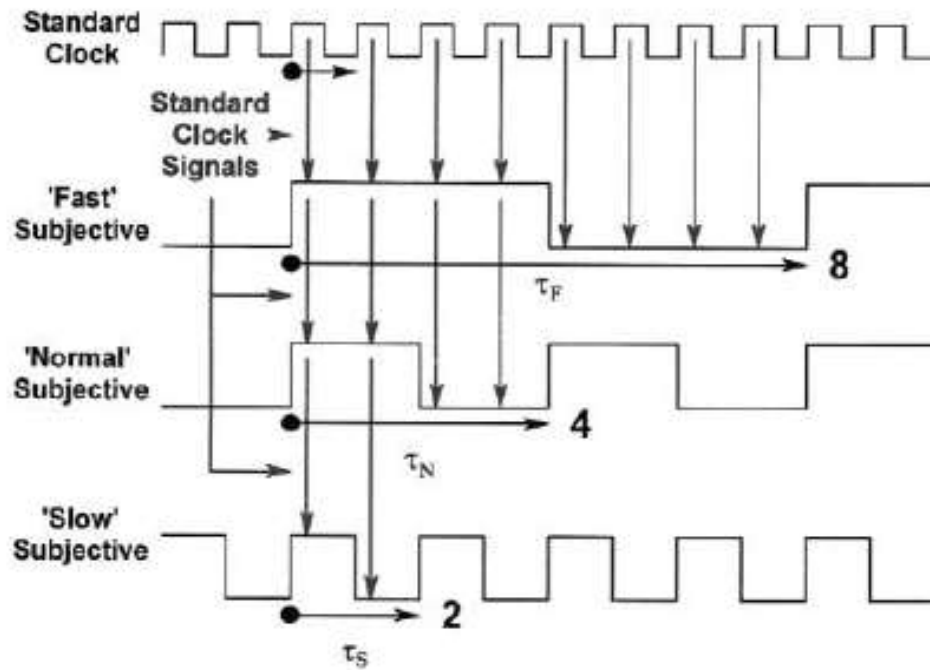


Figure 6. This illustrates the 'speeding up' and 'slowing down' of the observers sense of external time based on the number of signals detected from a standard clock in each of the three types of subjective 'time' frames. The 'arrows of time' pointing from left to right, are the created by the relationship between the standard clock, signals, and the observer 'components' acting together to form a T-computer in the observers reference frame.



SCOTT MATHESON HITCHCOCK

These are the CUSTOM MADE **DIFFRACTION GRATING** GLASSES ABOVE [transmission type] that I brought to give to all the participants of the workshop at IHEP [The Institute For High Energy Physics], Protvino, Russia was for my Invited Talk Presented: Friday, June 29, 2001:

"Time and Information: The Origins of 'Time' from Information Flow In Complex Systems"

Photons are everywhere! The idea here was to bring a new way to view at the universe through its most important phenomenon - photons. They allow us to get spectra that would otherwise be invisible to us from light sources and reflected light from objects that make up the universe and to understand fundamental processes driving the evolution of these objects of **observable** matter in the universe

Photons carry information that upon detection can be processed and used by our conscious brain to construct the 'reality' and they're everywhere! They fill the vacuum sea between all matter. Even if they don't find their way into our eyes they are everywhere in space. Space is dark unless we detect them in which case our brains process them into the images that color our maps of reality. Photons are the waves on the vacuum ocean of hidden energy.

